

CLAIMS

1. In a computer graphics system, a method for applying texture mapping in per-pixel operations, the method comprising:

receiving a plurality of parameters that define a pixel value at a pixel in a primitive;

selecting a set of parameters from the plurality of parameters, the selected set of parameters being associated with texture values, one parameter per texture value, the parameters that are not selected defining a set of unselected parameters that have constant values over the primitive;

determining a texture value for each of the selected parameters by accessing a set of textures, the texture value for the selected parameters varying over the primitive; and

evaluating the pixel value by using the unselected parameters and the texture values, wherein the set of unselected parameters are not texture values and the texture values are associated with the selected parameters.

2. The method as recited in claim 1, further comprising:

displaying the generated pixel light value on a display device.

3. The method as recited in claim 1, wherein the plurality of parameters includes per-primitive parameters, which are defined over the entire primitive.

4. The method as recited in claim 1, wherein the primitive is a polygon.
5. The method as recited in claim 1, wherein the plurality of parameters includes both scalar and vector parameters.
6. The method as recited in claim 3, wherein the plurality of parameters includes one or more of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.
7. The method as recited in claim 1, wherein the operation of determining the texture value further comprises the operations of:
- receiving texture coordinates for accessing the set of textures; and
 - accessing the textures in response to the texture coordinates to generate the texture values.
8. The method as recited in claim 7, wherein the accessed texture includes a plurality of texture elements, the method further comprising the operation of:
- filtering the accessed texture elements of the texture map onto the selected pixel to generate the texture value associated with the pixel.

9. The method as recited in claim 1, wherein a light value is generated for the pixel value by evaluating a lighting equation that is defined in terms of the plurality of parameters.

10. A device for generating per-pixel values of pixels in a primitive by using texture parameters, the pixel values of the pixels in the primitive being defined by a plurality of parameters, the device comprising:

a texture memory for storing a set of texture maps;

a texture unit for receiving texture coordinates for accessing a set of selected texture maps in the texture memory, the set of selected texture maps being associated with a set of selected parameters selected from among the plurality of parameters that define a pixel value in the primitive, the texture unit generating a texture value associated with the pixel from each of the selected texture maps, wherein the parameters that are not selected from the plurality of parameters define a set of unselected parameters; and

a rendering unit for generating the pixel value in response to the texture values of the selected parameters and to the unselected parameters.

11. The device as recited in claim 10, wherein the primitive is a polygon.

12. The device as recited in claim 10, wherein one or more of the selected parameters are selected from a parameter group consisting of emission material color,

ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.

13. The device as recited in claim 10, wherein the plurality of parameters includes both scalar and vector parameters.

14. The device as recited in claim 10, wherein the pixel value is a light value that is generated by evaluating a lighting equation using the plurality of parameters.

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15. A computer graphics system for generating per-pixel values for pixels in a primitive by using texture parameters, the pixel values being defined by a plurality of parameters, the system comprising:

a processor coupled to a bus;

a main memory coupled to the bus;

a storage unit coupled to the bus; and

a graphics subsystem coupled to receive a plurality of parameters defining the pixel values for the pixels in the primitive, the graphics subsystem including:

means for selecting a set of parameters from the plurality of parameters, the selected set of parameters being associated with texture values, one parameter per

texture value, the parameters that are not selected defining a set of unselected parameters that have constant values over the primitive;

means for determining a texture value for each of the selected parameters by accessing a set of textures, the texture value for the selected parameters varying over the primitive; and

means for evaluating the pixel value by using the unselected parameters and the texture values, wherein the set of unselected parameters are not texture values and the texture values are associated with the selected parameters.

16. The system as recited in claim 15, wherein one or more of the selected parameters are selected from a parameter group consisting of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.

17. The system as recited in claim 15, wherein the plurality of parameters includes both vector and scalar parameters.

18. The system as recited in claim 15, wherein the pixel value is a light value that is generated by evaluating a lighting equation using the plurality of parameters.

